

IN THE CLAIMS:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims

1-14. (Canceled)

15. (Currently Amended) A method for producing an alcohol, the method comprising reacting ~~the an~~ (R)-2-octanol dehydrogenase ~~of claim 1~~, a microorganism producing the (R)-2-octanol dehydrogenase ~~enzyme or the protein~~, or a processed product of the microorganism with a ketone to reduce the ketone, wherein the (R)-2-octanol dehydrogenase has the following physicochemical properties (1) and (2):

(1) Action

i) The enzyme produces ketone by oxidizing alcohol using oxidized form of β -nicotinamide adenine dinucleotide as a coenzyme, and

ii) The enzyme produces alcohol by reducing ketone using reduced form of β -nicotinamide adenine dinucleotide as a coenzyme, and

(2) Substrate specificity

i) The enzyme preferentially oxidizes (R)-2-octanol of two optical isomers of 2-octanol, and

ii) The enzyme produces (S)-4-halo-3-hydroxybutyric acid esters by reducing 4-haloacetoacetic acid esters.

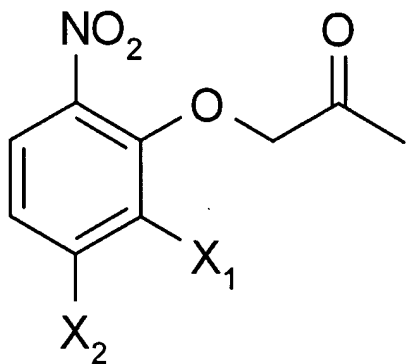
16. (Original) The method of claim 15, wherein the microorganism is a transformant comprising a recombinant vector into which a polynucleotide encoding a (R)-2-octanol dehydrogenase is inserted.

17. (Original) The method of claim 15, wherein the ketone is a 4-haloacetoacetic acid ester derivative and wherein the alcohol is an (S)-4-halo-3-hydroxybutyric acid ester derivative.

18. (Original) The method of claim 17, wherein the 4-haloacetoacetic acid ester derivative is 4-chloroacetoacetic acid ethyl ester and wherein the alcohol is (S)-4-chloro-3-hydroxybutyric acid ethyl ester.

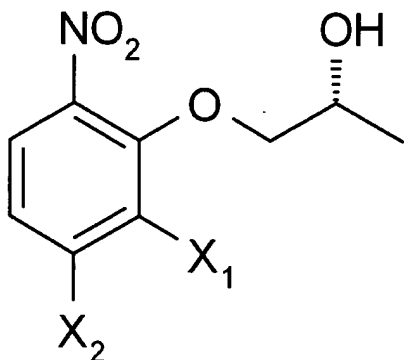
19. (Original) The method of claim 15, wherein the ketone is an acetonyloxybenzene derivative represented by the generic formula 1:

generic formula 1



where each of x₁ and x₂ indicates a halogen atom; and wherein the alcohol is a propoxybenzene derivative represented by the generic formula 2:

generic formula 2



20. (Original) The method of claim 19, wherein the acetyloxybenzene derivative is 2-acetyloxy-3,4-difluoronitrobenzene and wherein the alcohol is 2,3-difluoro-6-nitro[(R)-2-hydroxypropyl]oxy]benzene.
21. (Original) The method of claim 15, the method further comprising converting oxidized form of β -nicotinamide adenine dinucleotide into reduced form thereof.
22. (Canceled)
23. (Currently Amended) A method for producing an optically active alcohol, the method comprising the steps of reacting ~~the an~~ (R)-2-octanol dehydrogenase ~~of claim 1~~, a microorganism producing the (R)-2-octanol dehydrogenase enzymes or the protein, or a processed product of the microorganism with a racemic alcohol to preferentially oxidize either optical isomer, and obtaining the remaining optically active alcohol, wherein the (R)-2-octanol dehydrogenase has the following physicochemical properties (1) and (2):
- (1) Action
- i) The enzyme produces ketone by oxidizing alcohol using oxidized form of β -nicotinamide adenine dinucleotide as a coenzyme, and

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ii) The enzyme produces alcohol by reducing ketone using reduced form of β -nicotinamide adenine dinucleotide as a coenzyme, and

(2) Substrate specificity

i) The enzyme preferentially oxidizes (R)-2-octanol of two optical isomers of 2-octanol, and

ii) The enzyme produces (S)-4-halo-3-hydroxybutyric acid esters by reducing 4-haloacetoacetic acid esters.

24. (Canceled)